NAEP
NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

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Measure Up

Spring 2007

Assessment news for eighth-grade teachers

Using NAEP in Your Classroom—Science

With the publication of NAEP results, select questions from each assessment are released. Teachers can access the questions, answer keys and scoring guides, sample student responses, and national performance results for eighth-grade students using the NAEP Questions Tool at *http://nces.ed.gov/nationsreportcard/itmrls.* The Questions Tool includes both multiple-choice and constructed response questions for all NAEP subjects and grades. Below, read about what two questions from the NAEP 2005 science assessment measured and how they were scored.

The NAEP science framework guides the science assessment. The framework is developed by the National Assessment Governing Board and is available at **http://www.nagb.org.** The framework specifies three fields of science: Physical Science, Earth and Space Sciences, and Life Science. Additionally, the framework includes three aspects of Knowing and Doing Science: Scientific Investigation, Practical Reasoning, and Conceptual Understanding. On page 3 there are two released questions in the field of Physical Science and the sub content of Matter and Its Transformations. The first question involves Conceptual Understanding, which probes students' abilities to use and apply science understanding in new, real-world applications. The second question involves Scientific Investigation. Scientific investigation probes students' abilities to use the tools of science, including both cognitive and laboratory. Students should be able to acquire new information, plan appropriate investigations, use a variety of scientific tools, and communicate the results of their investigations.

For the first question, an answer was "complete" if the student correctly classified all seven items. Fifty-seven percent of eighth-graders nationwide had a complete answer. Thirty-eight percent of students had an "essential" answer, correctly classifying four to six items. A "partial" answer correctly classified one to three items. Four percent of students had a partial answer. One percent of students had an "unsatisfactory/incorrect" answer, classifying none of the items correctly.

For the second question, 19 percent of eighth-graders gave a complete response; 29 percent gave a partial response; and 46 percent gave an unsatisfactory/incorrect response. Seven percent of students either omitted the question or provided off task responses. Sample student responses for the second question are on page 3.

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Facts About NAEP 2007

- **From January 22 to March 2, 2007, over 500,000 eighth-graders participated in the NAEP reading, writing, or mathematics assessment.**
- **Over 6,700 eighth-grade schools participated.**
- **Over 5,200 NAEP staff administered the assessment to students in grades 4, 8, and 12 across the country.**
- **On average, 2,600 schools were assessed nationwide at grades 4, 8, and 12 each week of the assessment period.**

High School Transcript Study—What Does It Mean?

The NAEP High School Transcript Study (HSTS) collects and analyzes transcripts from a representative sample of America's public and private high school graduates. The study is designed to inform the public about the types of courses that graduates take during high school, how many credits they earn, and their grade point averages (GPAs).

The HSTS also explores the relationship between course-taking patterns and student achievement, as measured by the National Assessment of Educational Progress (NAEP). High school transcript studies have been conducted periodically for nearly two decades, permitting the reporting of trends in course-taking and GPA as well as providing information about recent high school graduates.

The next HSTS will occur in 2009, when current eighth-graders will be high school sophomores. As an eighth-grade teacher, you may be interested in the results of the 2005 HSTS.

- In 2005, graduates earned about three credits more that their 1990 counterparts, or about 360 additional hours of instruction during their high school years.
- Graduates whose highest mathematics course was geometry or below had average NAEP mathematics scores below the *Basic* achievement level. Graduates who took calculus had average NAEP scores at the *Proficient* level.
- Graduates whose highest science course was chemistry or below had average NAEP science scores below the *Basic* achievement level, while those who had completed physics or other advanced science courses had average scores at the *Basic* level.
- Graduates who had completed a rigorous curriculum or had GPAs placing them in the top 25 percent of graduates had higher average NAEP mathematics scores than other graduates.

Visit **http://nationsreportcard.gov** for the full report.

For the HSTS, curriculum levels are defined by the number of course credits earned by graduates in specified types of courses during high school as follows:

Standard	at least four credits of English and three each in social studies, mathematics, and science
Mid-level	in addition to standard courses, geometry and algebra I or II must be completed; at least two courses in biology, chemistry, and physics; and at least one foreign language credit
Rigorous	in addition to mid-level courses, an additional credit in mathematics including pre-calculus or higher; biology, chemistry, and physics; and at least three foreign language credits

Citation: Shettle, C., Roey, S., Mordica, J., Perkins, R., Nord, C., Teodorovic, J., Brown, J., Lyons, M., Averett, C., Kastberg, D. (2006). *The Nation's Report Card: America's High School Graduates* (NCES 2007-467). U.S. Department of Education, National Center for Education Statistics. Washington, DC: U.S. Government Printing Office.

Using NAEP in Your Classroom—Science

(Continued from page 1)

1. Look at each item in the list on the right. Decide if it conducts electricity or does not conduct electricity. Put an X in the box to show what you decided.

Item	Conducts Electricity	Does Not Conduct Electricity
House Key		
Rubber Band		
Coin		
Wooden Toothpick		
Metal Fork		
Plastic Spoon		
Aluminum Foil		

2. Suppose that you have one of the items from the list in the previous question that you believe conducts electricity, and that you also have a battery, several wires, and a light bulb.

   Explain how you could use these things to do a test to find out if the item you chose from the list in Question 1 does conduct electricity. Draw a picture to help explain your answer.

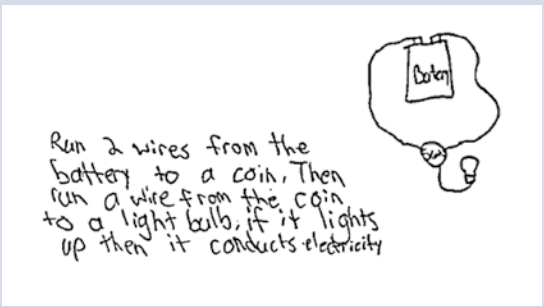
   _____

   _____

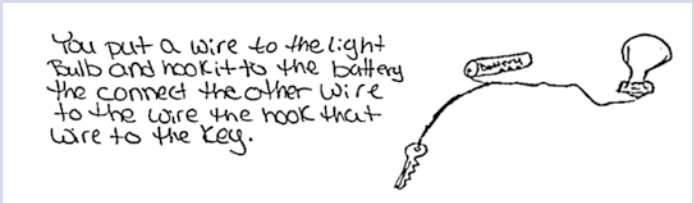
Sample student responses for question 2

Complete: Student draws and/or describes how a battery, wires, and a light bulb could be used to test for electrical conductivity.

Partial: Student describes some elements of a complete circuit, but does not clearly describe how the circuit could be modified to test for electrical conductivity (e.g., "hook up the wires to the battery and light bulb"), or student draws a partially correct picture or diagram, or draws an incorrect diagram but specifies that the lighting of the bulb would indicate conductivity.



Unsatisfactory/Incorrect: Student is unable to describe an electrical circuit or to explain accurately how to test an item for electrical conductivity.



- *To use released eighth-grade questions in the classroom, teachers should visit* ***http://nces.ed.gov/nationsreportcard*** *and select "Sample Questions."*
- *From there, teachers can select "Search Options" followed by the subject and grade 8. A series of questions will appear, and teachers can review the questions, sample student responses, and performance data for students nationwide and by state.*

Did you know?

- **The results for the 2007 eighth-grade reading and mathematics assessments are expected to be released in the late fall of 2007. The 2007 writing results are expected to be released in spring of 2008.**
- **You can access released assessment items and create your own assessments by visiting *http://nces.ed.gov/nationsreportcard/itmrls*.**
- **There are over 650 released eighth-grade questions on the NAEP Questions Tool online.**

NAEP results are reported in two ways—scale scores and achievement levels—so that student performance can be more easily understood. NAEP scale scores are reported on either a 0-300 or 0-500 scale for each grade, depending on the subject. Achievement levels categorize student achievement as *Basic*, *Proficient*, and *Advanced*, using ranges of performance established for each grade. The achievement levels are based on collective judgments about what students should know and be able to do relative to the body of content reflected in each subject-area assessment. Policy definitions of the three levels are:

Basic	Denotes partial mastery of knowledge and skills that are fundamental for proficient work at each grade.
Proficient	Represents solid academic performance. Students reaching this level have demonstrated competency over challenging subject matter.
Advanced	Signifies superior performance.

NAEP scales are developed independently for each subject, so scale score and achievement level results cannot be compared across subjects

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View NAEP data for a particular state or contact your NAEP State Coordinator	The National Center for Education Statistics at **http://nces.ed.gov/nationsreportcard/states**
Access specific results for a grade level, subject, jurisdiction, and/or student groups	The NAEP Data Explorer at **http://nces.ed.gov/nationsreportcard/nde**
Find information regarding the types of questions used on NAEP assessments or to view subject-specific questions	The NAEP Questions Tool at **http://nces.ed.gov/nationsreportcard/itmrls**
Download a Sample Questions Booklet that contains sample test questions for NAEP assessments	The National Center for Education Statistics at **http://nces.ed.gov/nationsreportcard/about/booklets.asp**
Learn more about how policy is drafted for each NAEP assessment	The National Assessment Governing Board at **http://www.nagb.org**
Offer a comment or suggestion on NAEP	The National Center for Education Statistics mailbox at **http://nces.ed.gov/nationsreportcard/contactus.asp**

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